

*In the claims*

1-12. Previously canceled

13. (Previously amended) An automated method for analyzing distribution of a protein of interest between cell membrane and cell cytoplasm comprising:

a) providing an array of locations which contain multiple cells, wherein the cells contain a plurality of fluorescent reporter molecules, wherein the plurality of fluorescent reporter molecules comprise fluorescent reporter molecules that report on cell cytoplasm, fluorescent reporter molecules that report on cell membrane, and fluorescent reporter molecules that report on the protein of interest;

b) automatically imaging multiple cells in each of the locations containing cells to obtain fluorescent signals from the plurality of fluorescent reporter molecules on or in individual cells, wherein the fluorescent signals from the fluorescent reporter molecules that report on cell cytoplasm are used to create cell cytoplasmic masks of individual cells and the fluorescent signals from the fluorescent reporter molecules that report on cell membrane are used to create cell membrane [~~cytoplasmic~~] masks of individual cells;

c) automatically measuring an intensity of the fluorescent signals from the fluorescent reporter molecules that report on the protein of interest in the cell cytoplasmic mask and in the cell membrane mask; and

d) automatically calculating one or both of the following:

i) a ratio of the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the protein of interest in the cell cytoplasmic mask and/or the cell membrane mask; and

ii) a difference of the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the protein of interest in the cell cytoplasmic mask and/or the cell membrane mask;

wherein the ratio and/or difference provides a measure of the distribution of the protein of interest between the cytoplasm and the cell membrane in the individual cells.

2 14. (Previously amended) The method of claim 13 further comprising contacting the cells with a test compound, and wherein the ratio and/or difference provides a measure of

test compound-induced changes in the distribution of the protein of interest between the cytoplasm and the cell membrane in the individual cells.

3 18. (Previously amended) The method of claim 17 wherein the plurality of fluorescent reporter molecules comprises fluorescently labeled proteins, fluorescently labeled antibodies, and chimeric proteins comprising green fluorescent protein coupled to a protein of interest.

16-20. Canceled

4 21. (Previously added) The method of claim 18 wherein the cellular protein of interest comprises a protein selected from the group consisting of a GTP binding protein and a protein tyrosine kinase.

5 22. (Previously added) The method of claim 21 wherein the cellular protein of interest is a GTP binding protein.

6 23. (Previously added) The method of claim 22 wherein the GTP binding protein is a Rho protein.

7 24. (Previously added) The method of claim 21 wherein the cellular protein of interest comprises a protein tyrosine kinase.

8 25. (Previously added) The method of claim 24 wherein the protein tyrosine kinase is a src protein.

26-27. Canceled

9 28. (Previously added) The method of claim 18 further comprising automatically storing an image of each individual cell.

10 29. (Previously added) The method of claim 18 wherein calculations made in step (d) [the digital data] are stored in a database.

11 30. (Previously added) The method of claim 29 wherein the calculations made in step (d) [digital data are] stored in a database can be reviewed for individual cells.

12 31. (Previously added) The method of claim 29 wherein the calculations made in step (d) [digital data are] stored in a database can be reviewed for individual locations containing cells.